

REMARKS

Applicant's undersigned attorney would initially like to express appreciation to the Examiner for the time expended during to a telephone interview regarding the present Application on September 19, 2005. As discussed with the Examiner during the interview, Applicant believes that the present invention is patentable over the cited art for reasons discussed during the interview and reiterated hereinbelow.

In the Office Action mailed May 26, 2005, the Examiner rejected Claims 1-7 and 9-14 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,267,221 to *Miller et al.* Further, Claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over *Miller et al.* alone, Claims 15-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Miller et al.* in view of U.S. Patent No. 5,920,972 to *Palczewska*, and Claims 18-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Miller et al.* in view of U.S. Patent No. 6,546,803 to *Ptchelintsev et al.* Finally, the Examiner rejected Claim 21 under 35 U.S.C. §112 for reasons not relating to the patentability of the subject matter thereof. In the latter regard, Applicant has amended Claim 21 to overcome the rejection. As noted, Applicant submits that all pending claims are allowable over the cited art.

In particular, independent Claims 1 and 22 are each directed to an ultrasound probe that comprises a support member, a signal cable having a plurality of electrically conductive members and an ultrasound transducer array having a plurality of transducer elements supportably mounted to a first side of the support member. Of importance, a distal end portion of each of the plurality of electrically conductive members of the signal cable is separately at least partially embedded within and continuously extends into and through the support member to the first side thereof. In turn, the plurality of transducer elements of the ultrasound transducer array are electrically and fixedly interconnected to different ones of the plurality of electrically conductive members at the first side of the support member. The cited art fails to disclose the noted features of independent Claims 1 and 22.

In particular, *Miller et al.* fails to disclose any arrangement in which distal end portions of electrically conductive members of a signal cable are partially embedded within and continuously extend into and through a support member to a first side on which an ultrasound transducer array is supportably mounted. Rather, in alternate embodiments of *Miller et al.*, a circuit element 19.1 or 19.2 terminates at and abuts a backing 27.1 or 27.2, respectively. See e.g. Figs. 3 and 2 of *Miller et al.*

More particularly, *Miller et al.* states that:

FIGS. 2 and 3 show embodiments of the invention The transducer array 25.1 shown in FIG. 3 is substantially the same as the assembly shown in FIG. 1 with a transducer array 15.1 and a printed circuit board, strip, cable, semiconductor element or the like 19.1 (hereinafter “circuit element”) having leads 11 formed thereon. . . . Contacts 29.1 are provided on circuit element traces 11 to facilitate connection.

Similarly, the transducer assembly 25.2 shown in FIG. 2 includes . . . [an] array 15.2 of transducer elements 13 and a circuit element 19.2 having a printed contact, plated hole or other contact 29.2 thereon for each transducer element. . . . Each of the backings 27 (i.e. 27.1 or 27.2) has . . . a bottom face or surface 33. There . . . is also an electrical contact, formed in a manner to be described later, for each transducer element on bottom surface 33. (emphasis added.) Column 4, Line 59-Column 5, Line 16.

In short, Figs. 2 and 3 of *Miller et al.* show embodiments in which a backing has “electrical contacts” on a bottom surface for abutting “contacts” on a circuit element. In relation to such “electrical contacts,” and with reference to Fig. 4, *Miller et al.* further states that:

For the embodiment shown in FIG. 4, it is assumed that both top surface 31 and bottom surface 33 [of backing 27] have been initially metalized with a conductive material and that the metal is . . . removed . . . to leave contacts 35 on top face 31 in physical and electrical contact with conductors 39 projecting from block 37, and to leave electrical contacts 41 on bottom surface 33 which are in physical and electrical contact with conductors 39 at surface 33.

The transducer array 15, circuit board 19 and backing 27 are then assembled . . . with contacts 41 in physical and electrical contact with contacts 22 on circuit board 19. An epoxy or other suitable adhesive may be applied . . . to hold the assembly together. The adhesive . . . between adjacent contacts 22 and 41 . . . [is] sufficiently thin . . . so as not to

provide significant electrical or acoustic impedance at these junctions.

(emphasis added.) Column 5, Lines 38-65.

Clearly, in the embodiments of Figs. 2 and 3 *Miller et al.* contemplates an abutment “junction” between backing electrical contacts and circuit element contacts, and fails to disclose or suggest an arrangement in which electrical conductors of a signal cable continuously extend into and through a support member, as per Claims 1 and 22 of the present application.

It should also be noted that in relation to the embodiment of Fig. 5 of *Miller et al.* it is stated that:

FIG. 5 also illustrates another alternative in the construction of this invention in that contacts 22 and 41 have been replaced by extending conductors 39 beyond the end of block 37, and by passing these extended conductors through plated-through holes 45 in circuit board 19 and securing the extended leads in the plated-through holes by standard techniques known in the art, such as soldering. (emphasis added.)

Column 8, Lines 36-43.

Again, such additional embodiment and all other embodiments of *Miller et al.* fail to disclose the distinguishing feature noted hereinabove, i.e. an arrangement in which electrically conductive members of a signal cable are separately at least partially embedded within and continuously extend into and through a support member. Additionally, Applicant submits that *Palczewska* and *Ptchelintsev et al.* fail to disclose or suggest the noted feature.

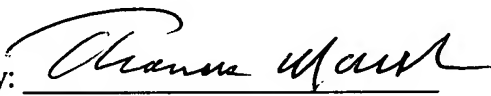
In view of the foregoing, Applicant submits that independent Claims 1 and 22 are allowable. Further, Applicant submits that Claims 2-21 and Claims 23-29, which depend from independent Claims 1 and 22, respectively, are allowable for the same reasons as noted above, and further since such Claims are directed to further combinative features not disclosed by or rendered obvious by *Miller et al.* or *Miller et al.* in combination with either *Palczewska* or *Ptchelintsev et al.* For example, in relation to Claims 5, 6, 25, 28 and 29, and contrary to the Examiner’s position set forth in the Office Action, *Miller et al.* fails to disclose a support member comprising two or more members interconnected on adjoining sides with a plurality of electrically conductive members, or wires, of a signal cable captured and extending therebetween from a second side to a first side of the support member. Rather, the layers 37a, 37b of the embodiment shown in Fig. 5 of *Miller et al.* are

adjoined orthogonal to conductors 39, i.e., the conductors 39 do not extend between the layers 37a, 37b from a second side to a first side.

Based upon the foregoing, Applicant believes that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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